

**LISTING OF THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-21. (Canceled)

22. (Previously Presented) The thermal protection system of claim 33, wherein the carbon foam is coal-based carbon foam.

23. (Previously Presented) The thermal protection system of claim 33, wherein the carbon foam has a density ranging from about 0.1 g/cc to about 0.8 g/cc.

24. (Previously Presented) The thermal protection system of claim 33, wherein the carbon foam has a compressive strength up to about 6,000 psi.

25. (Previously Presented) The thermal protection system of claim 33, wherein the carbon foam is carbonized carbon foam.

26. (Previously Presented) The thermal protection system of claim 33, wherein the carbon foam has been impregnated with at least one selected from the group consisting of petroleum pitch, epoxy resins, and polymers.

27. (Previously Presented) The thermal protection system of claim 33, wherein the carbon foam comprises an inert solid material.

28. (Previously Presented) The thermal protection system of claim 27, wherein the inert solid material comprises ceramic particles.

29. (Previously Presented) The thermal protection system of claim 33, wherein the oxidation inhibitor comprises a metal.

30. (Previously Presented) The thermal protection system of claim 29, wherein the metal is selected from the group consisting of aluminum and inconel.

31. (Previously Presented) The thermal protection system of claim 33, wherein the oxidation inhibitor comprises a glass-forming compound.

32. (Previously Presented) The thermal protection system of claim 31, wherein the glass-forming compound is selected from the group consisting of a metal halide, metal carbide, and metal nitride.

33. (Previously Presented) A thermal protection system, comprising:  
an insulating core comprising carbon foam;

an oxidation inhibitor incorporated into said carbon foam; and  
an antioxidant protective layer on a surface of the carbon foam.

34. (Cancelled)

35. (Previously Presented) The thermal protection system of claim 33, wherein the antioxidant protective layer comprises a coating of a glass-forming compound.

36. (Previously Presented) The thermal protection system of claim 35, wherein the glass-forming compound is selected from the group consisting of a metal halide, metal carbide, and metal nitride.

37. (Previously Presented) The thermal protection system of claim 33, wherein the antioxidant protective layer comprises a metal.

38. (Previously Presented) The thermal protection system of claim 37, wherein the metal is selected from the group consisting of aluminum and inconel.

39. (Previously Presented) A thermal protection system, comprising:  
an insulating core comprising carbon foam; and  
an oxidation inhibitor incorporated into said carbon foam, wherein the oxidation inhibitor comprises a glass-forming compound.

40. (Previously Presented) The thermal protection system of claim 39, wherein the oxidation inhibitor comprises a metal.

41. (Previously Presented) The thermal protection system of claim 40, wherein the metal is selected from the group consisting of aluminum and inconel.

42. (Previously Presented) The thermal protection system of claim 39, wherein the oxidation inhibitor comprises a glass-forming compound.

43. (Previously Presented) The thermal protection system of claim 39, wherein the glass-forming compound is selected from the group consisting of a metal halide, metal carbide, and metal nitride.